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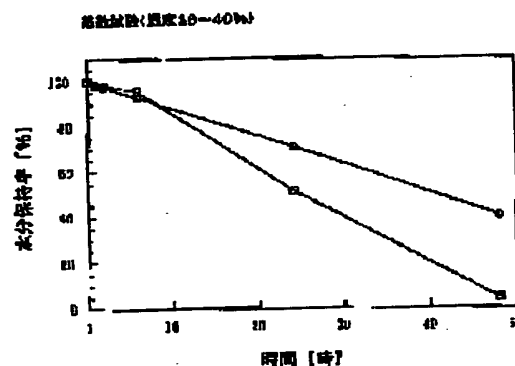
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## (54) MOISTURIZER AND TOILETRY GOODS CONTAINING THE SAME

### (57)Abstract:

PROBLEM TO BE SOLVED: To obtain a mositurizer which is inexpensive, exhibits sufficient dryness inhibitory effect (moisturizing effect) on the skin or the like and gives fine feeling on use and a toiletry good containing the moisturizer.

SOLUTION: This moisturizer is obtained by including a poly- $\gamma$ -glutamate crosslinking compound.



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CLAIMS

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[Claim(s)]

[Claim 1] The moisturizer which comes to contain a Polly gamma-glutamic-acid bridge formation object.

[Claim 2] The moisturizer according to claim 1 said whose moisturizer is a moisturizer for the skins.

[Claim 3] The moisturizer according to claim 1 said whose moisturizer is a moisturizer for hair.

[Claim 4] The moisturizer according to claim 1 said whose moisturizer is a moisturizer for pawls.

[Claim 5] The toiletries article containing a moisturizer according to claim 1 to 4.

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[Translation done.]



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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the toiletries article containing the moisturizer and it which have the moisture retainability which was more excellent in the detail about the toiletries article containing a moisturizer and it. Since the moisturizer (henceforth "this agent") of this invention demonstrates the moisture retainability which was excellent even when the humidity in a perimeter ambient atmosphere was low, it can prevent desiccation also in the conditions of the low humidity which is easy to dry, and is very useful.

[0002]

[Description of the Prior Art] The skin which consists on the surface of the body, hair, a pawl, etc. will produce various problems, if it dries too much. For example, when it dries too much, sensibility which is stretched carries out the skin or it has problems, like surface deterioration and a crack arise. Under the low humidity ambient atmosphere in winter, desiccation of the severe skin is produced and this has especially become the big cause of these problems. And I \*\*\*\*\* or hair has the problem of making the bruise of hair promote etc., when it dries too much. When it conflicts in hair and the reason hair is dried too much, there is a big problem that cannot cut one's hair well or appearance worsens by the bruise. Furthermore, a pawl has the problem that a crack occurs or exfoliation occurs, when it dries too much. Applying [ or ] a manicure (nail enamel) especially, a pawl dries and removing the applied manicure with a nail-polish remover causes a crack and exfoliation. In order to prevent the problem produced when such the skin, hair, a pawl, etc. dry ("henceforth the skin etc."), the moisturizer which brings about a moisturizincy effect has been used for the skin etc. from the former. Rather than the time of not doing this moisturizer so by applying or contacting the thing containing itself or it on the skin etc. ("henceforth spreading etc."), moisture content, such as this skin, is kept high, and various things have been developed and sold. As a moisturizer used from the former, the matter with which oneself, such as hyaluronic acid and a collagen, hold moisture (water retention), the matter which decreases in number or prevents the perspiration from front faces, such as squalane, are mentioned, for example. Moreover, an elastin, ceramide, a glucosamine, PURASENTA, chondroitin, creeping saxifrage extractives, KIWI extractives, an avocado, aloe extractives, the Artemisia capillaris extractives, etc. have been used as a moisturizer besides this.

[0003]

[Problem(s) to be Solved by the Invention] However, hyaluronic acid is expensive although the effectiveness of preventing desiccation of the skin etc. because spreading etc. uses the thing (for example, cosmetics) containing itself or it as the skin etc. is accepted. For this reason, spreading etc. used the thing containing hyaluronic acid itself or it as the skin etc., and there was a problem raised sharply the price of what costs increase to preventing desiccation of the skin etc. enough, or contains it (for example, cosmetics) (conversely, when it was going to suppress the increment in costs, and the price hike, sufficient quantity of hyaluronic acid could not be used, but there was a problem that sufficient desiccation prevention effectiveness was not acquired.). On the other hand, since the matter which decreases in number or prevents the



perspiration from front faces, such as the skins, such as squalane prevents desiccation of the skin etc. by covering front faces, such as the skin, with oil, although the effectiveness of preventing desiccation of the skin etc. was accepted, the user of a moisturizer was sticky and it had the problem of sensing admiration. Thus, the conventional moisturizer had the problem in fields, such as the desiccation prevention effectiveness, such as a price and the skin, and a feeling of use.

[0004] Then, it has the desiccation prevention effectiveness (moisturizincy effects, such as the skin), such as skin cheap and sufficient in this invention, and aims at offering the good moisturizer of a feeling of use.

[0005]

[Means for Solving the Problem] When this invention persons had repeated examination wholeheartedly that the above-mentioned technical problem should be solved, a Polly gamma-glutamic-acid bridge formation object finds out having the desiccation prevention effectiveness (moisturizincy effects, such as the skin), such as sufficient skin, and they came to complete this invention. That is, this invention is a moisturizer which comes to contain a Polly gamma-glutamic-acid bridge formation object.

[0006] As for the moisturizer (henceforth "this agent") of this invention, the following modes are contained.

(1) The above-mentioned moisturizer said whose moisturizer is a moisturizer for the skins.

(2) The above-mentioned moisturizer said whose moisturizer is a moisturizer for hair.

(3) The above-mentioned moisturizer said whose moisturizer is a moisturizer for pawls.

In addition, in this specification and a drawing, as long as there is especially no notice, weight % shall be said "%."

[0007]

[Embodiment of the Invention] It is not limited especially that the "Polly gamma-glutamic-acid bridge formation object" said to this invention should just be what has the structure where the polymerization of the Polly gamma-glutamic acid was carried out, and the bridge was constructed. And although the "Polly gamma-glutamic-acid bridge formation object" used for this invention may be manufactured by what kind of approach and it is not limited especially, the approach indicated by the specification of JP,11-343339,A (Japanese Patent Application No. No. 220081 [ ten to ]), the approach indicated by the specification of JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]), the approach indicated by the specification of JP,7-72267,B (Japanese Patent Application No. No. 132952 [ 05 to ]) can be mentioned, for example. In addition, a Polly gamma-glutamic-acid bridge formation object has high biodegradability.

[0008] For example, the approach (henceforth "this process") of irradiating a radiation at the solution of Polly gamma-glutamic acid is indicated by JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]) as the manufacture approach of a Polly gamma-glutamic-acid bridge formation object. A special chemical except Polly gamma-glutamic acid does not need to be used for this process, it is the approach that a Polly gamma-glutamic-acid bridge formation object can be easily manufactured by radiation irradiation, and since it has the higher moisturizincy effect, the Polly gamma-glutamic-acid bridge formation object moreover manufactured by this process can be used especially suitable for this agent. although it refers to JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]), while quoting JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]) in detail about this process (paragraph numbers 0006-0013) -- a profile -- it explains here.

[0009] After that concentration dissolves Polly gamma-glutamic acid in solvents, such as water, so that it may become 4 - 7% of the weight still more preferably two to 8% of the weight preferably two to 15% of the weight, and this process irradiates a radiation subsequently to this solution, it can acquire the generated bridge formation object by carrying out separation generation etc. If it is 2 or less % of the weight, water absorption is low, and if it is 15 % of the weight or more, the rate of gelation becomes low and is not desirable from the point of yield.

[0010] About the Polly gamma-glutamic acid used for this process, there is especially no limit and what is depended on the various manufacture approaches is used. For example, a



microorganism, for example, the cultivation by the *Bacillus subtilis* cultivation by the transgenics microorganism, the approach of preparing from fermented soybeans, or a chemosynthesis method is various idea \*\*\*\*. although all are usable if it is the strain which generates Polly gamma-glutamic acid out of a fungus body when manufacturing Polly gamma-glutamic acid by the cultivation by the microorganism -- especially -- punishment -- a lath group strain is desirable. as a concrete example -- punishment -- lath ZUBUCHIRUSU and punishment -- lath anthra cis- \*\* -- punishment -- lath NATTOU etc. is used. especially -- punishment -- what has millions or more molecular weight produced by microorganism like lath *Subtilis* is desirable (JP,1-174397,A). In addition, when there is no effect in a polymerization reaction, the derivative which embellished the alkyl group etc. can be used for the carboxyl group of Polly gamma-glutamic acid etc.

[0011] In the cultivation of the microorganism used by this process, if Polly gamma-glutamic acid is produced, what kind of thing is sufficient as strain, a culture medium, etc. if it is the culture medium which contains suitably the nutriment of a carbon source, a nitrogen source, and an inorganic substance and others as a culture medium -- a synthetic medium and a natural medium -- either can be used. As addition amino acid, these salts, such as L-glutamic acid, an aspartic acid, an alanine, a leucine, a phenylalanine, and a histidine, can be used, and it is L-glutamic acid preferably, and is 3 - 10% preferably 2 to 12%.

[0012] As a carbon source, although a glucose, sucrose, a citric acid, or a xylose can be used, they are a citric acid or a glucose preferably. As a nitrogen source, inorganic nutrient, such as sources of heterotrophism, such as a peptone or a yeast extract, and an ammonium sulfate, etc. can be used. Culture is performed under aerobic conditions, such as shaking culture or spinner culture, and 25-45 degrees C of culture temperature are 30-40 degrees C preferably. pH at the time of culture -- 5-9 -- it is 6-8 preferably and a sodium hydroxide, a potassium hydroxide, etc. perform pH adjustment at the time of culture.

[0013] Polly gamma-glutamic acid is usually accumulated for culture time amount out of a fungus body in 48 - 72 hours. The Polly gamma-glutamic acid in the culture medium after culture termination is recoverable by the approach currently performed from the former. That is, the filter filtration which has centrifugal separation, a filter aid, or micropore can remove a fungus body, and Polly gamma-glutamic acid can be collected by carrying out an ultrafiltration. Moreover, the ethanol of an amount etc. is added three to 4 times, and Polly gamma-glutamic acid is settled. Precipitate is dissolved in water, insoluble matter is removed, with dialysis or an ultrafiltration, except for a low-molecular-weight object, reprecipitation can be repeated by ethanol etc. and Polly gamma-glutamic acid can be collected.

[0014] In this process, it is based on radical polymerization as the approach of carrying out the polymerization of the Polly gamma-glutamic acid. In the case of this process, the radical polymerization by the radiation is used. Especially water is desirable, although it will not be limited as a dissolution solvent of Polly gamma-glutamic acid especially if Polly gamma-glutamic acid can be dissolved, for example, water, a methyl alcohol water solution, an ethyl alcohol water solution, etc. are mentioned, when based on a radiation.

[0015] Radiation irradiation of the solution which dissolved Polly gamma-glutamic acid is filled up with and carried out to a radiolucency container, for example, a glass vial bottle etc. Although there is no limit, for example, there are alpha rays, beta rays, a gamma ray, an electron ray, a neutron beam, an X-ray, etc. especially about a radiation, it is a gamma ray preferably. Although a gamma ray does not have especially a limit, the thing which made it generate with the irradiation equipment which makes the cobalt 60 a line source for example is used. In this case, dose rate 1.0-20kGy/time amount is desirable. They are dose rate 1.0-1.4kGy/time amount still more preferably. Although especially irradiation time is not restricted, it is desirable to make it become 30 or more kGies of quantity of radiation. Then, the Polly gamma-glutamic-acid bridge formation object which is a solid can be acquired by removing water. This Polly gamma-glutamic-acid bridge formation object is transparent and colorless, is excellent in absorptivity, and also has biodegradability.

[0016] Although especially the moisturizer (this agent) of this invention is not limited, it is useful especially as a moisturizer to a pawl in the skin (a face, hand and foot (an elbow, a knee, and a



heel are included.), the [redacted], and the scalp are included.), hair, and [redacted]st. Even if the moisturizer (this agent) of this invention consists only of a Polly gamma-glutamic-acid bridge formation object substantially, it may come to mix a Polly gamma-glutamic-acid bridge formation object and the other component. this -- as the other component, if it may be blended with skin external preparations (drugs, cosmetics, perfumery and cosmetics, a cleaning agent, and other quasi drugs are included.), various things can be used according to the application site, the operation, and the purpose of this agent, and other moisturizers, an external use basis, perfume, a thickener, preservatives, etc. can be illustrated as an example. And although the concentration of the Polly gamma-glutamic-acid bridge formation object in this agent may also be variously determined according to the operation and the purpose of this agent, it may usually be about 0.01 - 5 % of the weight.

[0017] Moreover, the moisturizer (this agent) of this invention can also be blended and used for skin external preparations, such as drugs and a toiletries article, although spreading etc. may use it by making independent [ its ] into the skin and a hair list in application sites, such as a pawl. Therefore, this invention offers the toiletries article which comes to blend the moisturizer (this agent) of above-mentioned this invention. Especially as this toiletries article, although not limited For example, (1) cream, a milky lotion, face toilet, a pack agent, foundation (makeup agent for substrates), The cosmetics for the skins containing an eye mask, an eye cream, a lip stick, a lip cream, etc., (2) Hair (for hair) gel, a hair (for hair) spray, liquid pomade, The cosmetics for hair containing a hair tonic, a hair mousse, pomade, a tic, a hair cream, a hair (for hair) rinse agent, a hair (for hair) treatment agent, etc., the shampoo for (3) hair, a body shampoo, hand soap, soap (both a solid and a liquid are included.) etc. -- cosmetics for pawls, such as an included cleaning agent, (4) bathing agent, nourishing cream for (5) pawls, a manicure (a coat agent is included.), and a nail-polish remover, etc. can be illustrated. According to the toiletries article of this invention, since front faces, such as the skin, hold or adhere to a Polly gamma-glutamic-acid bridge formation object as a moisturizer, desiccation of the skin etc. can be prevented and a moisturizing effect can be demonstrated over a long period of time. Although it may be suitably set according to a class, operation, the purpose of this toiletries article, etc. as an amount of the moisturizer (this agent) of this invention blended with a toiletries article and is not limited especially, it usually converts into the amount of the Polly gamma-glutamic-acid bridge formation object contained in this moisturizer, and considers as 0.01 % of the weight - 20% of the weight of the range. In addition, since the Polly gamma-glutamic-acid bridge formation object has high biodegradability as mentioned above, even if a Polly gamma-glutamic-acid bridge formation object flows into a nature by using the toiletries article which comes to blend the moisturizer (this agent) of this invention, and it, a Polly gamma-glutamic-acid bridge formation object is quickly disassembled in a nature. For this reason, by using the toiletries article which comes to blend the moisturizer (this agent) of this invention, and it, the effects (for example, contamination, destruction, etc.) on a nature can be minimized.

[0018]

[Example] Hereafter, in order to explain this invention concretely, an example and the example of a trial are given. However, this invention is not restricted at all by this example etc.

[0019] (Example 1: Preparation of a Polly gamma-glutamic-acid bridge formation object) The Polly gamma-glutamic-acid bridge formation object was prepared like the example 5 (paragraph number 0017) of JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]). That is, after having dissolved Polly gamma-glutamic acid in water so that it might become concentration 5% of the weight, and carrying out bubbling with nitrogen, 2ml was put into 10ml sample bottle with a lid, and the lid was shut. With the gamma ray irradiation equipment which uses the cobalt 60 for this sample bottle as a line source, by dose rate 1.2kGy/time amount, the gamma ray was irradiated so that it might be set to quantity-of-radiation 20kGy at a room temperature. The obtained processing object was picked out from 10ml sample bottle with a lid, it was immersed in 4 degrees C [ per ] water week, and Polly gamma-glutamic acid non-constructed a bridge was removed. At the wire gauze of 80 meshes, after filtration, it freeze-dried and the Polly gamma-glutamic-acid hydro gel which absorbed and swelled water was obtained as a Polly gamma-glutamic-acid bridge formation object.



[0020] (Example 2: Evapotranspiration trial) About the moisturizing effect of a Polly gamma-glutamic-acid bridge formation object, it checked by the following experiments. Drawing 1 is the mimetic diagram having shown the procedure of an evapotranspiration trial typically. An evapotranspiration experiment is explained with reference to drawing 1. it is shown in drawing 1 (a) -- as -- the interior of the weighing bottle 11 (the diameter of 2.6cm, height of 4.5cm) of weight known -- glass bead 13 (diameter of 0.4mm) 2g -- inserting in -- the inner bottom of a weighing bottle 11 -- a glass bead 13 -- abbreviation -- it accustomed so that it might become even. Subsequently, as shown in drawing 1 (b), the weight of the weighing bottle 11 in which the glass bead 13 was inserted was measured. And as shown in drawing 1 (c), about 0.2ml sample water solution 15 (it mentions later for details.) was poured into the interior of the weighing bottle 11 in which the glass bead 13 shown in drawing 1 (b) was inserted, and was used as the examined bottle 21. Two kinds of things as follows were used for the sample water solution 15 here.

Sample Water-solution X: 1.0% water-solution sample water solution Y of Polly gamma-glutamic-acid bridge-formation objects which was dissolved in purified water and prepared the Polly gamma-glutamic-acid bridge-formation object prepared according to the example 1 (example of a comparison): 1.0% water solution of hyaluronate sodium which was dissolved in purified water and prepared hyaluronate sodium [0021] On the other hand, as shown in drawing 1 (d), the desiccator 17 with a magnitude of about 30cm was prepared as a diameter of the cylinder part which holds a dry matter-ed, and about 1000ml drying agent 19 (it mentions later for details.) was inserted in the pars basilaris ossis occipitalis of a desiccator 17. Two kinds of things as follows were used for the drying agent 19 here.

Drying-agent A:  $K_2CO_3$  saturated-water solution (70% of relative humidity abbreviation in 25 degrees C)

B: 70%  $H_2SO_4$  of drying agents 4 water solution (40% of relative humidity abbreviation in 25 degrees C)

In addition, since the relative humidity in the equilibrium put on the 25-degree C closed air space is 70% of abbreviation, a drying agent A It is used for reproducing the situation (for example, summer) which is not dried so much to the desiccator 17 interior. A drying agent B Since the relative humidity in the equilibrium state put on the 25-degree C closed air space is 40% of abbreviation, it is used for reproducing a dry situation (for example, winter) to the desiccator 17 interior.

[0022] Furthermore, the examined bottle 21 by which the sample water solution 15 was poured in has been arranged to the desiccator 17 interior (the desiccator 17 interior is made into a sealing condition). Then, the desiccator 17 with which the examined bottle 21 has been arranged was held in the humidistat kept at 25 degrees C. As shown in drawing 1 (e), the weight of the examined bottle 21 of the desiccator 17 interior was measured with time, moisture retention was calculated for every measurement, and it observed how moisture retention would change with time. In addition, it is defined as the moisture retention said here by the formula shown by (weight [ of an examined bottle ] - (pure-water part weight in examined bottle in front of weight-desiccator insertion of examined bottle in front of desiccator insertion)) / (pure-water part weight in examined bottle in front of desiccator insertion) x 100. "Weight of an examined bottle" means the occasional weight measured with time by drawing 1 (e) among this formula. With "weight of the examined bottle in front of desiccator insertion" In drawing 1 R> 1 (c), the weight after the completion of impregnation of the sample water solution 15 is said. With "the pure-water part weight in the examined bottle in front of desiccator insertion" It is the pure-water part weight in the sample water solution 15 poured into the weighing bottle 11 in drawing 1 (c). (It sets to drawing 1 (c) and is the weight after the completion of impregnation of the sample water solution 15) It is x (moisture concentration in a sample water solution : here 0.99) (- (weight of the weighing bottle 11 in which the glass bead 13 measured in drawing 1 (b) was inserted)).

[0023] Drawing 1 (a) explained above Four kinds of the combination which shows the actuation shown in - (e) in the next table 1 were followed.

(Table 1) Combination sample water solution of an evapotranspiration trial X Y X Y drying agent A A B B experimental run number 1 2 3 4 [0024] The result at the time of using a drying agent A



as a drying agent 19 is shown in drawing 2, and the result at the of using a drying agent B as a drying agent 19 is shown in drawing 3. In drawing 2 and drawing 3, the result at the time of the sample water solution X being used as a sample water solution 15 is shown as O. The result at the time of the sample water solution Y being used as a sample water solution 15 was shown as \*\* (that is, the result of an experimental run number 1 as O in drawing 2 among Table 1), as \*\* in drawing 2 R> 2, the result of an experimental run number 3 is shown as O in drawing 3, and the result of an experimental run number 2 is shown by the result of an experimental run number 4 as \*\* in drawing 3, respectively.

[0025] Both drawing 2 and drawing 3 take moisture retention (unit: %) for the elapsed time (at unit: the time) after the examined bottle by which the sample water solution was poured in is inserted in a desiccator along an axis of ordinate for an axis of abscissa. From drawing 2 and drawing 3, moisture retention is decreasing in connection with the passage of time about all examined bottles. Reduction of the moisture retention shows that the examined bottle by which the sample water solution X was poured in all over the same Fig. (namely, thing using the same drying agent) is smaller than the examined bottle by which the sample water solution Y was poured in, and the sample water solution X has less water loss than the sample water solution Y, i.e., the water holding capacity of a Polly gamma-glutamic-acid bridge formation object is larger than the water holding capacity of hyaluronate sodium. In drawing 2, furthermore, the difference in the moisture retention of the examined bottle by which the sample water solution X was poured in, the examined bottle by which the sample water solution Y was poured in, and \*\* Although it is not so large and the moisture retention of the examined bottle by which the sample water solution Y was poured in with time amount progress is falling rapidly in drawing 3, the decline in the moisture retention of the examined bottle by which the sample water solution X was poured in is loose. When drawing 2 is compared with drawing 3, namely, under low humidity ( drawing 3 ), such as winter As for the sample water solution Y (hyaluronate sodium), moisture retention falls remarkably (if the moisture retention of 48 hours after is seen). As for the sample water solution X (Polly gamma-glutamic-acid bridge formation object), moisture retention is not changing [ as opposed to / at drawing 2 / about 40% / as opposed to / at drawing 3 / that ] so much about 5% (when the moisture retention of 48 hours after is seen, at drawing 2, it is about 40% in about 50% and drawing 3 ). That is, it became clear that a Polly gamma-glutamic-acid bridge formation object can hold moisture enough under low humidity, such as winter for which a skin moisturizing effect is most needed. And under high humidity ( drawing 2 ), such as a summer, since the Polly gamma-glutamic-acid bridge formation object shows the almost same moisture retention as the hyaluronate sodium used as a skin moisturizer from the former, under high humidity, such as a summer, it moisturizes too much, and it is sticky, and does not spoil a feeling of use. As mentioned above, a Polly gamma-glutamic-acid bridge formation object can improve sharply the low moisture retainability under the low humidity which was the fault of the conventional skin moisturizer.

[0026] (Example 3: Manufacture of cosmetics) Face toilet was prepared with the conventional method based on the formula of Table 2. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used. (Table 2) Table [ ] formula of face toilet Presentation Loadings (%)

Ethanol 10.00 Sorbitol liquid 5.00 The methylparaben 0.05 Tripoli oxyethylene ether phosphoric acid 0.40 A Polly gamma-glutamic-acid bridge formation object 0.10 Citric acid 0.02 sodium citrates 0.05 Purified water Residue (sum total) 100.00 [0027] The essence was prepared with the conventional method based on the formula of Table 3. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used.

(Table 3) Table [ ] formula of an essence Presentation Loadings (%)

Ethanol 8.00 1, three butylene glycols 5.00 The methylparaben 0.10 The polyoxyethylene cetyl ether 0.20 A Polly gamma-glutamic-acid bridge formation object 0.25 Xanthan gum 0.05 Hydroxyethyl cellulose 0.10 Edetic acid disodium 0.01 Purified water Residue (sum total) 100.00 [0028] Hair (for hair) gel was prepared with the conventional method based on the formula of Table 4. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared



according to the above-mentioned example 1 was used.

(Table 4) Table [ ] formula of hair (for hair) gel Presentation Loadings (%)

Ethanol 15.00 The methylparaben 0.10 The polyoxyethylene cetyl ether 0.20 A carboxyvinyl polymer 0.70 A vinyl acetate vinyl-pyrrolidone copolymer 13.00 N-methacryloiloxy-ethyl N, N-Dimethylammonium- $\alpha$ -N-methyl Carboxy betaine-methacrylic acid 2.00 1, 3-butylene glycol 10.00 Triethanolamine 0.70 Hydroxy methoxybenzophenone sulfonic acid 0.05 Disodium edetate 0.05 Hydrolysis keratin liquid 5.00 Hydrolysis collagen liquid 5.00 Polly gamma-glutamic-acid bridge formation object 0.10 Purified water Residue (sum total) 100.00 [0029] (Example 4: Manufacture of a cleaning agent) The shampoo for hair was prepared with the conventional method based on the formula of Table 5. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used.

(Table 5) Table [ ] formula of the shampoo for hair Presentation Loadings (%)

Lauryl sulfuric-acid triethanolamine 20.00 Polyoxyethylene lauryl ethereal sulfate sodium 10.00 Sodium alkylsulfate liquid 10.00 Palm-oil-fatty-acid amide propyl betaine liquid 10.00 Polyoxyethylene lauryl ether 1.00 Palm-oil-fatty-acid diethanolamide 3.00 Palm-oil-fatty-acid monoethanolamide 0.45 Distearic acid ethylene glycol 0.50 Methylparaben 0.10 Glycerol 5.00 Chlorination O-[2-hydroxy-3-(trimethyl AMMO NIO) propyl] hydroxyethyl cellulose 0.20 Polyoxyethylene methyopolysiloxane copolymer 0.10 Polly gamma-glutamic-acid bridge formation object 0.05 Purified water Residue (sum total) 100.00 [0030] (Example 5: Use experiment of cosmetics) According to the formula shown in Table 6, the face toilet with which a use experiment is presented was prepared.

(Table 6) Table [ ] formula of face toilet Presentation Loadings (%)

Ethanol 10.00 Sorbitol liquid 5.00 The methylparaben 0.05 Tripoli oxyethylene ether phosphoric acid 0.40 A moisturizer 0.10 A citric acid 0.02 Sodium citrate 0.05 Purified water residue (sum total) 100.00 -- as a moisturizer in Table 6 here Use the thing using a glycerol as face toilet 1, and the thing using propylene glycol is used as face toilet 2. The thing using 1 and 3 butylene glycol was used as face toilet 3, the thing using hyaluronate sodium was used as face toilet 4, the thing using a collagen was used as face toilet 5, and the thing using the Polly gamma-glutamic-acid bridge formation object prepared according to the above-mentioned example 1 was used as face toilet 6.

[0031] About these face toilet 1-6, the effectiveness at the time of actually using it was evaluated. the evaluation approach -- an organoleptic-test member -- ten persons -- face toilet 1-6 -- each was evaluated every [ 1 ] on the 1st. The evaluation schedule on concrete the 1st is as follows. First, the face toilet to evaluate is applied to the optimum dose face at 7:00 a.m., and immediate effect nature moisture retainability will be evaluated at 7:30 a.m. immediately after spreading. While evaluating durability moisture retainability at 4:00 p.m., the feeling of use which lets the one day pass is evaluated. The mark of ten-point full marks estimated this immediate effect nature moisture retainability and durability moisture retainability mainly based on the feeling generated by xerosis cutis called a feeling of an umbrella umbrella, a feeling of a prop, etc. of the face skin. And the feeling of use which lets one day pass evaluated the synthetic feeling of use including the condition of whether he has sensibility the bottom all over and the skin by the mark of ten-point full marks. The mark which each organoleptic-test member evaluated about each face toilet were totaled (namely, full marks), and when it was 85 or more points, it was O and 70 or more points [ less than 85 ], it was O and 50 or more points [ less than 70 ] and it was \*\* and less than 50 points, it considered as x. An evaluation result is shown in Table 7.

[0032]

(Table 7) The evaluation result of face toilet 1-6 Immediate effect nature moisture retainability Durability moisture retainability Feeling of use Face toilet 1 O x x Face toilet 2 \*\* x \*\* face toilet 3 x \*\* \*\* face toilet 4 \*\* O O Face toilet 5 \*\* O\*\* face toilet 6 O O O [0033] From Table 7, the face toilet 6 using a Polly gamma-glutamic-acid bridge formation object has acquired 70 or more points about immediate effect nature moisture retainability, durability moisture retainability, and all the feeling of use, and these three items of all are kept high level. About durability moisture retainability and a feeling of use, face toilet 6 has especially acquired 85 or more points.



Since a Polly gamma-glutamic-acid bridge formation object can be manufactured cheaply and moreover has sufficient xerosis cutis prevention effectiveness (skin moisturizancy effect), it is useful as a cheap and good skin moisturizer of a feeling of use, so that the above thing may show. Furthermore, by blending with cosmetics by using a Polly gamma-glutamic-acid bridge formation object as a skin moisturizer, it has cheap and sufficient xerosis cutis prevention effectiveness (skin moisturizancy effect), and can consider as the good cosmetics of a feeling of use.

[0034] (Example 6: Use experiment of hair (for hair) gel) According to the formula shown in Table 8, the hair (for hair) gel with which a use experiment is presented was prepared.

(Table 8) Table [ ] formula of hair (for hair) gel Presentation Loadings (%)

Ethanol 15.00 The methylparaben 0.10 The polyoxyethylene cetyl ether 0.20 A carboxyvinyl polymer 0.70 A vinyl acetate vinyl-pyrrolidone copolymer 13.00 N-methacryloxy-ethyl N, N-Dimethylammonium- $\alpha$ -N-methyl Carboxy betaine-methacrylic acid 2.00 1, 3-butylene glycol 10.00 Triethanolamine 0.70 Hydroxy methoxybenzophenone sulfonic acid 0.05 Disodium edetate 0.05 Hydrolysis keratin liquid 5.00 Hydrolysis collagen liquid 5.00 Moisturizer 0.10 Purified water A residue What used the glycerol here as a moisturizer in Table 8 is made into gel 1. (Sum total) 100.00 -- The thing using propylene glycol was made into gel 2, the thing using 1 and 3 butylene glycol was made into gel 3, the thing using hyaluronate sodium was made into gel 4, and the thing using the Polly gamma-glutamic-acid bridge formation object prepared according to the above-mentioned example 1 was made into gel 5.

[0035] About these gel 1-5, the effectiveness at the time of actually using it was evaluated. the evaluation approach -- an organoleptic-test member -- ten persons -- gel 1-5 -- each was evaluated every [ 1 ] on the 1st. The evaluation schedule on concrete the 1st is as follows. First, the gel to evaluate is applied to the optimum dose hair (hair) at 7:00 a.m., and it usually passed and was made to dry with a dryer. And moisture retainability and a feeling of use were evaluated at 4:00 p.m. of the day. Ten-point full marks estimated moisture retainability mainly based on the feeling generated by hair desiccation called the feeling of PASATSUKI and the feeling of GOWAGOWA of the hair. Moreover, a feeling of use mainly evaluated the synthetic feeling of use which includes the condition of scalp, such as sensibility and sensibility to stretch, the bottom all over by the mark of ten-point full marks. The mark which each organoleptic-test member evaluated about each gel were totaled (namely, full marks), and when it was 85 or more points, it was O and 70 points or more, it was O and 50 or more points [ less than 70 ] and it was \*\* and less than 50 points, it considered as x. An evaluation result is shown in Table 9.

[0036]

(表9) ジェル1～5の評価結果

	保湿力	使用感
ジェル1	○	×
ジェル2	△	×
ジェル3	×	△
ジェル4	○	○
ジェル5	◎	○

[0037] From Table 9, as for the gel 5 using a Polly gamma-glutamic-acid bridge formation object, all of moisture retainability and a feeling of use have acquired 70 or more points, and all of these dyadic eye are kept high level. About moisture retainability, gel 5 has especially acquired 85 or more points. Since a Polly gamma-glutamic-acid bridge formation object can be manufactured cheaply and moreover has sufficient xerasia prevention effectiveness (hair moisturizancy effect), it is useful as a cheap and good moisturizer for hair of a feeling of use, so that the above thing may show. Furthermore, by blending with the cosmetics for hair by using a Polly gamma-glutamic-acid bridge formation object as the moisturizer for hair, it has cheap and sufficient xerasia prevention effectiveness (hair moisturizancy effect), and can consider as the good cosmetics for hair of a feeling of use.

[0038] (Example 7: Use experiment of the shampoo for hair) According to the formula shown in



Table 10, the shampoo for hair with which a use experiment is prepared was prepared.

(Table 10) Table [ ] formula of the shampoo for hair Presentation Loadings (%)

Lauryl sulfuric-acid triethanolamine 20.00 Polyoxyethylene lauryl ethereal sulfate sodium 10.00

Sodium alkylsulfate liquid 10.00 Palm-oil-fatty-acid amide propyl betaine liquid 10.00

Polyoxyethylene lauryl ether 1.00 Palm-oil-fatty-acid diethanolamide 3.00 Palm-oil-fatty-acid

monoethanolamide 0.45 Distearic acid ethylene glycol 0.50 Methylparaben 0.10 Glycerol 5.00

Chlorination O-[2-hydroxy-3-(trimethyl AMMO NIO) propyl] hydroxyethyl cellulose 0.20

Polyoxyethylene methyopolysiloxane copolymer 0.10 Moisturizer 0.05 Purified water Residue

What used the glycerol here as a moisturizer in Table 10 is considered as a shampoo 1. (Sum total) 100.00 -- Consider the thing using propylene glycol as a shampoo 2, and the thing using 1 and 3 butylene glycol is considered as a shampoo 3. The thing using hyaluronate sodium was considered as the shampoo 4, the thing using a collagen was considered as the shampoo 5, and the thing using the Polly gamma-glutamic-acid bridge formation object prepared according to the above-mentioned example 1 was considered as the shampoo 6.

[0039] About these shampoos 1-6, the effectiveness at the time of actually using it was evaluated. the evaluation approach -- an organoleptic-test member -- ten persons -- shampoos 1-6 -- each was evaluated every [ 1 ] on the 1st. The evaluation schedule on concrete the 1st is as follows. First, with the shampoo to evaluate, the hair (hair) was washed at 10:00 p.m., and it fully rinsed. Then, a rinse, no hair treatment, etc. were used, but were wiped off with the towel which dried the moisture adhering to the hair, and were dried with the dryer usually through the hair. Then, it went to bed at 11:00 p.m., and moisture retainability and a feeling of use were evaluated at 7:00 a.m. of the next day. Ten-point full marks estimated moisture retainability mainly based on the feeling generated by hair desiccation called the feeling of PASATSUKI and the feeling of GOWAGOWA of the hair. Moreover, a feeling of use mainly evaluated the synthetic feeling of use which includes the condition of scalp, such as sensibility and sensibility to stretch, the bottom all over by the mark of ten-point full marks. The mark which each organoleptic-test member evaluated about each shampoo were totaled (namely, full marks), and when it was 85 or more points, it was O and 70 points or more, it was 0 and 50 or more points [ less than 70 ] and it was \*\* and less than 50 points, it considered as x. An evaluation result is shown in Table 11.

[0040]

(表 11) シャンプー 1～6 の評価結果

	保湿力	使用感
シャンプー 1	○	×
シャンプー 2	△	△
シャンプー 3	×	△
シャンプー 4	△	×
シャンプー 5	×	×
シャンプー 6	◎	○

[0041] From Table 11, as for the shampoo 6 using a Polly gamma-glutamic-acid bridge formation object, all of moisture retainability and a feeling of use have acquired 70 or more points, and all of these dyadic eye are kept high level. About moisture retainability, the shampoo 6 has especially acquired 85 or more points. A moisturizincy effect can be given to all of hair and the skin (scalp) by blending a Polly gamma-glutamic-acid bridge formation object with a cleaning agent so that the above thing may show. Thus, since a Polly gamma-glutamic-acid bridge formation object has the desiccation prevention effectiveness (a hair moisturizincy effect and skin moisturizincy effect) of sufficient hair and the skin and can moreover manufacture it cheaply, it is useful as cheap good moisturizer for hair and skin moisturizer of a feeling of use. Furthermore, by blending with the shampoo for hair by using a Polly gamma-glutamic-acid bridge formation object as a moisturizer, it has cheap and sufficient xerasia prevention effectiveness (hair moisturizincy effect) and sufficient skin (scalp) desiccation prevention effectiveness (skin moisturizincy effect), and can consider as the good shampoo for hair of a feeling of use.



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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the toiletries article containing the moisturizer and it which have the moisture retainability which was more excellent in the detail about the toiletries article containing a moisturizer and it. Since the moisturizer (henceforth "this agent") of this invention demonstrates the moisture retainability which was excellent even when the humidity in a perimeter ambient atmosphere was low, it can prevent desiccation also in the conditions of the low humidity which is easy to dry, and is very useful.

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**PRIOR ART**

[Description of the Prior Art] The skin which consists on the surface of the body, hair, a pawl, etc. will produce various problems, if it dries too much. For example, when it dries too much, sensibility which is stretched carries out the skin or it has problems, like surface deterioration and a crack arise. Under the low humidity ambient atmosphere in winter, desiccation of the severe skin is produced and this has especially become the big cause of these problems. And I \*\*\*\*\* or hair has the problem of making the bruise of hair promote etc., when it dries too much. When it conflicts in hair and the reason hair is dried too much, there is a big problem that cannot cut one's hair well or appearance worsens by the bruise. Furthermore, a pawl has the problem that a crack occurs or exfoliation occurs, when it dries too much. Applying [ or ] a manicure (nail enamel) especially, a pawl dries and removing the applied manicure with a nail-polish remover causes a crack and exfoliation. In order to prevent the problem produced when such the skin, hair, a pawl, etc. dry ("henceforth the skin etc."), the moisturizer which brings about a moisturizincy effect has been used for the skin etc. from the former. Rather than the time of not doing this moisturizer so by applying or contacting the thing containing itself or it on the skin etc. ("henceforth spreading etc."), moisture content, such as this skin, is kept high, and various things have been developed and sold. As a moisturizer used from the former, the matter with which oneself, such as hyaluronic acid and a collagen, hold moisture (water retention), the matter which decreases in number or prevents the perspiration from front faces, such as squalane, are mentioned, for example. Moreover, an elastin, ceramide, a glucosamine, PURASENTA, chondroitin, creeping saxifrage extractives, KIWI extractives, an avocado, aloe extractives, the Artemisia capillaris extractives, etc. have been used as a moisturizer besides this.

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EFFECT OF THE INVENTION

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It has (moisturizincy effects, such as the skin) and aims at offering the good moisturizer of a feeling of use.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, hyaluronic acid is expensive although the effectiveness of preventing desiccation of the skin etc. because spreading etc. uses the thing (for example, cosmetics) containing itself or it as the skin etc. is accepted. For this reason, spreading etc. used the thing containing hyaluronic acid itself or it as the skin etc., and there was a problem raised sharply the price of what costs increase to preventing desiccation of the skin etc. enough, or contains it (for example, cosmetics) (conversely, when it was going to suppress the increment in costs, and the price hike, sufficient quantity of hyaluronic acid could not be used, but there was a problem that sufficient desiccation prevention effectiveness was not acquired.). On the other hand, since the matter which decreases in number or prevents the perspiration from front faces, such as the skins, such as squalane, prevents desiccation of the skin etc. by covering front faces, such as the skin, with oil, although the effectiveness of preventing desiccation of the skin etc. was accepted, the user of a moisturizer was sticky and it had the problem of sensing admiration. Thus, the conventional moisturizer had the problem in fields, such as the desiccation prevention effectiveness, such as a price and the skin, and a feeling of use.

[0004] Then, the desiccation prevention effectiveness, such as skin cheap and sufficient in this invention

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MEANS

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[Means for Solving the Problem] this invention persons are the desiccation prevention effectiveness, such as skin with a sufficient Poly gamma-glutamic-acid bridge formation object, when examination was repeated wholeheartedly that the above-mentioned technical problem should be solved.

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## EXAMPLE

[Example] Hereafter, in order to explain this invention concretely, an example and the example of a trial are given. However, this invention is not restricted at all by this example etc.

[0019] (Example 1: Preparation of a Polly gamma-glutamic-acid bridge formation object) The Polly gamma-glutamic-acid bridge formation object was prepared like the example 5 (paragraph number 0017) of JP,10-251402,A (Japanese Patent Application No. No. 240688 [ 09 to ]). That is, after having dissolved Polly gamma-glutamic acid in water so that it might become concentration 5% of the weight, and carrying out bubbling with nitrogen, 2ml was put into 10ml sample bottle with a lid, and the lid was shut. With the gamma ray irradiation equipment which uses the cobalt 60 for this sample bottle as a line source, by dose rate 1.2kGy/time amount, the gamma ray was irradiated so that it might be set to quantity-of-radiation 20kGy at a room temperature. The obtained processing object was picked out from 10ml sample bottle with a lid, it was immersed in 4 degrees C [ per ] water week, and Polly gamma-glutamic acid non-constructed a bridge was removed. At the wire gauze of 80 meshes, after filtration, it freeze-dried and the Polly gamma-glutamic-acid hydro gel which absorbed and swelled water was obtained as a Polly gamma-glutamic-acid bridge formation object.

[0020] (Example 2: Evapotranspiration trial) About the moisturizincy effect of a Polly gamma-glutamic-acid bridge formation object, it checked by the following experiments. Drawing 1 is the mimetic diagram having shown the procedure of an evapotranspiration trial typically. An evapotranspiration experiment is explained with reference to drawing 1 . it is shown in drawing 1 (a) -- as -- the interior of the weighing bottle 11 (the diameter of 2.6cm, height of 4.5cm) of weight known -- glass bead 13(diameter of 0.4mm) 2g -- inserting in -- the inner bottom of a weighing bottle 11 -- a glass bead 13 -- abbreviation -- it accustomed so that it might become even. Subsequently, as shown in drawing 1 (b), the weight of the weighing bottle 11 in which the glass bead 13 was inserted was measured. And as shown in drawing 1 (c), about 0.2ml sample water solution 15 (it mentions later for details.) was poured into the interior of the weighing bottle 11 in which the glass bead 13 shown in drawing 1 (b) was inserted, and was used as the examined bottle 21. Two kinds of things as follows were used for the sample water solution 15 here.

Sample Water-solution X: 1.0% water-solution sample water solution Y of Polly gamma-glutamic-acid bridge-formation objects which was dissolved in purified water and prepared the Polly gamma-glutamic-acid bridge-formation object prepared according to the example 1 (example of a comparison): 1.0% water solution of hyaluronate sodium which was dissolved in purified water and prepared hyaluronate sodium [0021] On the other hand, as shown in drawing 1 (d), the desiccator 17 with a magnitude of about 30cm was prepared as a diameter of the cylinder part which holds a dry matter-ed, and about 1000ml drying agent 19 (it mentions later for details.) was inserted in the pars basilaris ossis occipitalis of a desiccator 17. Two kinds of things as follows were used for the drying agent 19 here.

Drying-agent A:K<sub>2</sub>CO<sub>3</sub> saturated-water solution (70% of relative humidity abbreviation in 25 degrees C)

B:70% H<sub>2</sub>SO<sub>4</sub> of drying agents 4 water solution (40% of relative humidity abbreviation in 25 degrees C)



In addition, since the relative humidity in the equilibrium put on the 25-degree C closed air space is 70% of abbreviation, a drying agent A It is used for reproducing the situation (for example, summer) which is not dried so much to the desiccator 17 interior. A drying agent B Since the relative humidity in the equilibrium state put on the 25-degree C closed air space is 40% of abbreviation, it is used for reproducing a dry situation (for example, winter) to the desiccator 17 interior.

[0022] Furthermore, the examined bottle 21 by which the sample water solution 15 was poured in has been arranged to the desiccator 17 interior (the desiccator 17 interior is made into a sealing condition). Then, the desiccator 17 with which the examined bottle 21 has been arranged was held in the humidistat kept at 25 degrees C. As shown in drawing 1 (e), the weight of the examined bottle 21 of the desiccator 17 interior was measured with time, moisture retention was calculated for every measurement, and it observed how moisture retention would change with time. In addition, it is defined as the moisture retention said here by the formula shown by (weight [ of an examined bottle ]-(pure-water part weight in examined bottle in front of weight-desiccator insertion of examined bottle in front of desiccator insertion))/(pure-water part weight in examined bottle in front of desiccator insertion) x100. "Weight of an examined bottle" means the occasional weight measured with time by drawing 1 (e) among this formula. With "weight of the examined bottle in front of desiccator insertion" In drawing 1 R> 1 (c), the weight after the completion of impregnation of the sample water solution 15 is said. With "the pure-water part weight in the examined bottle in front of desiccator insertion" It is the pure-water part weight in the sample water solution 15 poured into the weighing bottle 11 in drawing 1 (c). (It sets to drawing 1 (c) and is the weight after the completion of impregnation of the sample water solution 15) It is x (moisture concentration in a sample water solution : here 0.99) (- (weight of the weighing bottle 11 in which the glass bead 13 measured in drawing 1 (b) was inserted)).

[0023] Drawing 1 (a) explained above Four kinds of the combination which shows the actuation shown in - (e) in the next table 1 were followed.

(Table 1) Combination sample water solution of an evapotranspiration trial X Y X Y drying agent A A B B experimental run number 1 2 3 4 [0024] The result at the time of using a drying agent A as a drying agent 19 is shown in drawing 2 , and the result at the time of using a drying agent B as a drying agent 19 is shown in drawing 3 . In drawing 2 and drawing 3 , the result at the time of the sample water solution X being used as a sample water solution 15 is shown as O. The result at the time of the sample water solution Y being used as a sample water solution 15 was shown as \*\* (that is, the result of an experimental run number 1 as O in drawing 2 among Table 1). as \*\* in drawing 2 R> 2, the result of an experimental run number 3 is shown as O in drawing 3 , and the result of an experimental run number 2 is shown by the result of an experimental run number 4 as \*\* in drawing 3 , respectively. .

[0025] Both drawing 2 and drawing 3 take moisture retention (unit: %) for the elapsed time (at unit: the time) after the examined bottle by which the sample water solution was poured in is inserted in a desiccator along an axis of ordinate for an axis of abscissa. From drawing 2 and drawing 3 , moisture retention is decreasing in connection with the passage of time about all examined bottles. Reduction of the moisture retention shows that the examined bottle by which the sample water solution X was poured in all over the same Fig. (namely, thing using the same drying agent) is smaller than the examined bottle by which the sample water solution Y was poured in, and the sample water solution X has less water loss than the sample water solution Y, i.e., the water holding capacity of a Polly gamma-glutamic-acid bridge formation object is larger than the water holding capacity of hyaluronate sodium. In drawing 2 , furthermore, the difference in the moisture retention of the examined bottle by which the sample water solution X was poured in, the examined bottle by which the sample water solution Y was poured in, and \*\* Although it is not so large and the moisture retention of the examined bottle by which the sample water solution Y was poured in with time amount progress is falling rapidly in drawing 3 , the decline in the moisture retention of the examined bottle by which the sample water solution X was poured in is loose. When drawing 2 is compared with drawing 3 , namely, under low humidity ( drawing 3 ), such as winter As for the sample water solution Y (hyaluronate sodium), moisture retention falls remarkably (if the moisture retention of 48 hours after is seen). As for



the sample water solution (Polly gamma-glutamic-acid bridge formation object), moisture retention is not changing [ as opposed to / at drawing 2 / about 40% / as opposed to / at drawing 3 / that ] so much about 5% (when the moisture retention of 48 hours after is seen, at drawing 2 , it is about 40% in about 50% and drawing 3 ). That is, it became clear that a Polly gamma-glutamic-acid bridge formation object can hold moisture enough under low humidity, such as winter for which a skin moisturizing effect is most needed. And under high humidity ( drawing 2 ), such as a summer, since the Polly gamma-glutamic-acid bridge formation object shows the almost same moisture retention as the hyaluronate sodium used as a skin moisturizer from the former, under high humidity, such as a summer, it moisturizes too much, and it is sticky, and does not spoil a feeling of use. As mentioned above, a Polly gamma-glutamic-acid bridge formation object can improve sharply the low moisture retainability under the low humidity which was the fault of the conventional skin moisturizer.

[0026] (Example 3: Manufacture of cosmetics) Face toilet was prepared with the conventional method based on the formula of Table 2. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used. (Table 2) Table [ ] formula of face toilet Presentation Loadings (%)

Ethanol 10.00 Sorbitol liquid 5.00 The methylparaben 0.05 Tripoli oxyethylene ether phosphoric acid 0.40 A Polly gamma-glutamic-acid bridge formation object 0.10 Citric acid 0.02 sodium citrates 0.05 Purified water Residue (sum total) 100.00 [0027] The essence was prepared with the conventional method based on the formula of Table 3. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used.

(Table 3) Table [ ] formula of an essence Presentation Loadings (%)

Ethanol 8.00 1, three butylene glycols 5.00 The methylparaben 0.10 The polyoxyethylene cetyl ether 0.20 A Polly gamma-glutamic-acid bridge formation object 0.25 Xanthan gum 0.05 Hydroxyethyl cellulose 0.10 Edetic acid disodium 0.01 Purified water Residue (sum total) 100.00

[0028] Hair (for hair) gel was prepared with the conventional method based on the formula of Table 4. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used.

(Table 4) Table [ ] formula of hair (for hair) gel Presentation Loadings (%)

Ethanol 15.00 The methylparaben 0.10 The polyoxyethylene cetyl ether 0.20 A carboxyvinyl polymer 0.70 A vinyl acetate vinyl-pyrrolidone copolymer 13.00 N-methacryloyloxy-ethyl N, N-Dimethylammonium- $\alpha$ -N-methyl Carboxy betaine-methacrylic acid 2.00 1, 3-butylene glycol 10.00 Triethanolamine 0.70 Hydroxy methoxybenzophenone sulfonic acid 0.05 Disodium edetate 0.05 Hydrolysis keratin liquid 5.00 Hydrolysis collagen liquid 5.00 Polly gamma-glutamic-acid bridge formation object 0.10 Purified water Residue (sum total) 100.00 [0029] (Example 4:

Manufacture of a cleaning agent) The shampoo for hair was prepared with the conventional method based on the formula of Table 5. In addition, as a Polly gamma-glutamic-acid bridge formation object, what was prepared according to the above-mentioned example 1 was used.

(Table 5) Table [ ] formula of the shampoo for hair Presentation Loadings (%)

Lauryl sulfuric-acid triethanolamine 20.00 Polyoxyethylene lauryl ethereal sulfate sodium 10.00 Sodium alkylsulfate liquid 10.00 Palm-oil-fatty-acid amide propyl betaine liquid 10.00 Polyoxyethylene lauryl ether 1.00 Palm-oil-fatty-acid diethanolamide 3.00 Palm-oil-fatty-acid monoethanolamide 0.45 Distearic acid ethylene glycol 0.50 Methylparaben 0.10 Glycerol 5.00 Chlorination O-[2-hydroxy-3-(trimethyl AMMO NIO) propyl] hydroxyethyl cellulose 0.20 Polyoxyethylene methyopolysiloxane copolymer 0.10 Polly gamma-glutamic-acid bridge formation object 0.05 Purified water Residue (sum total) 100.00 [0030] (Example 5: Use experiment of cosmetics) According to the formula shown in Table 6, the face toilet with which a use experiment is presented was prepared.

(Table 6) Table [ ] formula of face toilet Presentation Loadings (%)

Ethanol 10.00 Sorbitol liquid 5.00 The methylparaben 0.05 Tripoli oxyethylene ether phosphoric acid 0.40 A moisturizer 0.10 A citric acid 0.02 Sodium citrate 0.05 Purified water residue (sum total) 100.00 -- as a moisturizer in Table 6 here Use the thing using a glycerol as face toilet 1, and the thing using propylene glycol is used as face toilet 2. The thing using 1 and 3 butylene



glycol was used as face toilet 3, the thing using hyaluronate sodium was used as face toilet 4, the thing using a collagen was used as face toilet 5, and the thing using the Polly gamma-glutamic-acid bridge formation object prepared according to the above-mentioned example 1 was used as face toilet 6.

[0031] About these face toilet 1-6, the effectiveness at the time of actually using it was evaluated. the evaluation approach -- an organoleptic-test member -- ten persons -- face toilet 1-6 -- each was evaluated every [ 1 ] on the 1st. The evaluation schedule on concrete the 1st is as follows. First, the face toilet to evaluate is applied to the optimum dose face at 7:00 a.m., and immediate effect nature moisture retainability will be evaluated at 7:30 a.m. immediately after spreading. While evaluating durability moisture retainability at 4:00 p.m., the feeling of use which lets the one day pass is evaluated. The mark of ten-point full marks estimated this immediate effect nature moisture retainability and durability moisture retainability mainly based on the feeling generated by xerosis cutis called a feeling of an umbrella umbrella, a feeling of a prop, etc. of the face skin. And the feeling of use which lets one day pass evaluated the synthetic feeling of use including the condition of whether he has sensibility the bottom all over and the skin by the mark of ten-point full marks. The mark which each organoleptic-test member evaluated about each face toilet were totaled (namely, full marks), and when it was 85 or more points, it was O and 70 or more points [ less than 85 ], it was O and 50 or more points [ less than 70 ] and it was \*\* and less than 50 points, it considered as x. An evaluation result is shown in Table 7.

[0032]

(Table 7) The evaluation result of face toilet 1-6 Immediate effect nature moisture retainability Durability moisture retainability Feeling of use Face toilet 1 O x x Face toilet 2 \*\* x \*\* face toilet 3 x \*\* \*\* face toilet 4 \*\* O O Face toilet 5 \*\* O \*\* face toilet 6 O O O [0033] From Table 7, the face toilet 6 using a Polly gamma-glutamic-acid bridge formation object has acquired 70 or more points about immediate effect nature moisture retainability, durability moisture retainability, and all the feeling of use, and these three items of all are kept high level. About durability moisture retainability and a feeling of use, face toilet 6 has especially acquired 85 or more points. A Polly gamma-glutamic-acid bridge formation object can be cheaply manufactured so that the above thing may show, and moreover, it is sufficient xerosis cutis prevention effectiveness.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the mimetic diagram having shown the procedure of an evapotranspiration trial typically.

[Drawing 2] It is drawing showing the result of the evapotranspiration trial at the time of using a drying agent A as a drying agent.

[Drawing 3] It is drawing showing the result of the evapotranspiration trial at the time of using a drying agent B as a drying agent.

[Description of Notations]

11 Weighing Bottle

13 Glass Bead

15 Sample Water Solution

17 Desiccator

19 Drying Agent

21 Examined Bottle

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[Translation done.]



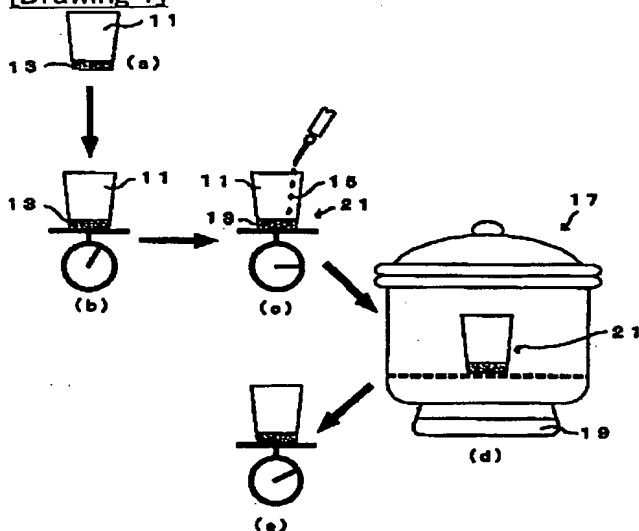
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2. \*\*\*\* shows the word which can not be translated.
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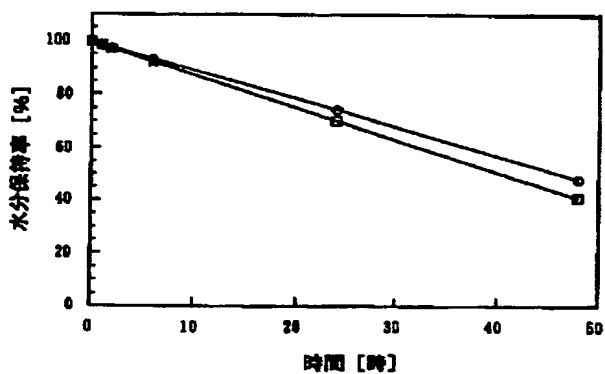
## DRAWINGS

[Drawing 1]



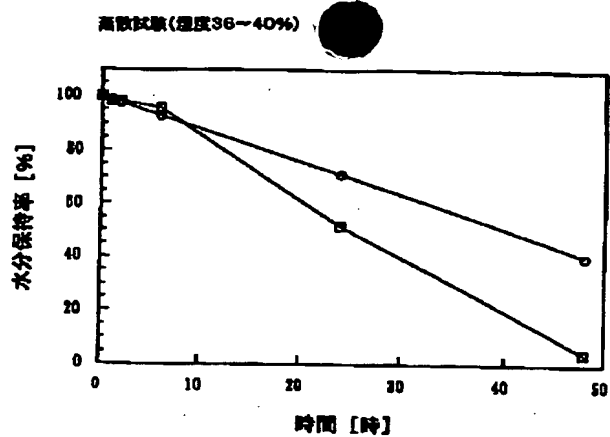
[Drawing 2]

蒸気試験(湿度65~89%)



[Drawing 3]





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[Translation done.]



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